Salton Sea Ecosystem Restoration:
Air Quality Monitoring Network--Plan Development and Implementation

October 11, 2007

Salton Sea Air Quality Technical Working Group Meeting

Overarching Goal of the Monitoring and Assessment Plan (MAP)

- Implement a data collection, analysis, management, and reporting system to inform and guide management actions for the restoration of the Salton Sea ecosystem.

Draft for Review and Comment: Air Quality Monitoring Objectives

- **Conduct a retrospective analysis of data to determine its relevance and/or applicability (Done)**
- **Incorporate relevant existing data**
- **Establish baseline/background conditions as a reference for measuring changes in AQ due to future management actions**
- **Provide information to refine AQ hypotheses, determine extent of restoration project AQ impacts, and to assess performance of AQ mitigation measures**
  - **Support focused studies, such as evaluation and mitigation of potential impacts from the construction and operation of the restoration program**
    - Construction emissions
    - Playa emissivity
    - Impacts to humans or ecosystems associated with exposures to emissions from the restoration project
    - Impacts on agriculture
    - Impacts on microclimate
- **Store, manage, and make AQ monitoring data publicly available in a timely manner**

Group Input on Objectives

History of the Salton Sea Air Quality and Meteorological Monitoring Network

- Large geographic area
- Several regulatory monitoring programs
  - ICAPCD
  - SCAQMD
  - California Air Resources Board
  - Torres Martinez Tribe
  - National Park Service
- Special Studies
  - USGS
  - DRI
  - SIP development support
  - DWR/CIMIS network

Current Air Quality and Meteorological Monitoring Stations

- Air District monitoring stations
- Torres Martinez monitoring program
- DWR CIMIS stations
- National Park Service (Joshua Tree)

Monitoring Considerations

- Pollutants to be monitored
- Station siting criteria
- Methods for sampling, analysis, data collection, and instrumentation
- Data quality objectives and quality control
- Installation and operations responsibility
- Data management and interpretation

Monitoring Considerations, cont.

- How many locations and how to site stations
- Potential costs - long term and short term
- Level of automation for data collection and management - short term costs vs. long term data availability

Monitoring Locations

- Review existing networks
  - Local air districts, ARB
  - Torres Martinez Tribe
  - DWR CIMIS
  - Other data sources identified in PEIR studies
- Identify and fill gaps in existing coverage (e.g., at the north end of Salton Sea)
- Specify locations based on project plans, human or ecosystem exposure potential, or sensitive receptors

Monitoring Plan Development

- DWR and their consultant, CH2M HILL discuss plan with stakeholders
- Draft plan outline
- Further collaboration with ICAPCD, SCAQMD, Torres Martinez, ARB, area landowners
- Assign roles and responsibilities
- Implement plan and share data

Monitoring Network Operation

- ICAPCD, under MOU with State agencies and SCAQMD
- Torres Martinez, on tribal lands

Data Management by DFG (and ARB?)

Constituents To Be Monitored

- EPA Criteria Pollutants
  - PM_{10}
  - $PM_{2.5}$
  - Ozone
  - NOx
  - SO_2

Constituents To Be Monitored, cont.

- Supplementary or Secondary Compounds
  - TSP
  - Diesel PM_{10}
  - Ammonia
  - H_2S, other sulfur compounds (?)
  - Deposition (salt, nitrogen compounds)
  - Visibility (fine particulate matter)
  - Inorganic compounds (e.g., in fugitive dust)
  - Volatile and semi-volatile organic compounds (VOCs and SVOCs)

Constituents To Be Monitored, cont.

- Meteorology
  - Wind Speed (10m)
  - Wind Gusts
  - Wind Direction (10m)
  - Temperature (2 and 10m)
  - Humidity
  - Solar Radiation
  - Precipitation
  - Microclimatic conditions near the Salton Sea

Data Uses

- **Establishing and documenting background/baseline ambient conditions**
  - **Particulate Matter**
    - TSP, PM_{10}, $PM_{2.5}$
    - Background/baseline concentrations
    - Episodic events, natural events
    - Predicting impacts
    - Predicting future trends

Data Uses, cont.

- **Establishing and documenting background/baseline ambient conditions**
  - **Other Pollutants of Concern**
    - Diesel PM10 from fuel combustion
    - Potential pollutants in fugitive dust (chromium, cadmium, arsenic, selenium)
    - Salt
    - Gaseous Pollutants
      - NOx and VOCs as precursors to ozone, CO, SO_2
      - Greenhouse gases
      - H_2S, ammonia

Data Uses, cont.

- Meteorology
  - Wind conditions to correlate with ambient air quality monitoring data and satellite imagery
  - Forensic studies of dust events
  - Predictive studies
  - Climate and/or microclimate considerations

Data Uses, cont.

- Support of focused project-level studies to evaluate impacts associated with proposed project and alternatives
  - Emissions estimation (MacDougall Method)
  - Mitigation effectiveness
  - Dispersion modeling
  - Health risk assessment
- Support of other needed research on potential mitigation measures and project impacts

Data Uses, cont.

- Meteorological data needed for other studies (e.g., wind data for water temperature and water quality modeling in Salton Sea)
- Support to local air districts, state, and federal agencies in attainment planning
- Correlation to data from other monitoring stations in the area (e.g., CIMIS)
- Evaluation of anecdotal and historical information on dust episodes, causes, and effects in the area

Studies at Owens Lake and Other Monitoring Programs Will Form Basis for Long Term Studies at Salton Sea

- Evaluation of similarities and differences between Owens Lake and Salton Sea
- Playa is already exposed at Owens Lake
- Wind tunnel testing has been done at both locations. Owens Lake data were used to conclude that wind tunnel testing at Salton Sea also needed to be done during the more humid, colder winter months.
- Results of Owens Lake studies and information on monitoring methods, control measures, control efficiencies, vegetation types, required percentage of vegetative cover, infrastructure requirements, and costs were used in development of the ERS and PEIR.
- Several factors are not being monitored at Owens Lake that may be of interest at the Salton Sea. Notably sulfur compounds and hazardous air pollutants.

Monitoring Plan – Next Steps

- DWR and their consultant, CH2M HILL discuss plan with stakeholders
- Draft plan outline as a "straw man"
- Further collaboration with ICAPCD, SCAQMD, Torres Martinez, ARB, area landowners
- Assign roles and responsibilities
- Meetings and decision making - ongoing
- Agreements and contracts
- Implement plan and share data